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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	John A. Krawczak	Confirmation No.	2554
Serial No.:	10/822,430	Examiner:	Jessica T. Stultz
Filed:	April 12, 2004	Art Unit:	2873
		Docket:	EA-00282
Title:	ELECTROABSORPTION MODULATOR BIASING		

Commissioner for Patents
P.O. BOX 1450
Alexandria, VA 22313-1450

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Docket No.: EA-00282

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	: 10/822,430
Applicants:	: John A. Krawczak
Filed:	: April 12, 2004
TC/A.U.	: 2873
Examiner:	: Jessica T. Stultz
Title	: Electroabsorption Modulator Biasing

APPEAL BRIEF

MS APPEAL BRIEF-PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir or Madame:

This brief, in compliance with 37 C.F.R. § 41.37, is in furtherance of the Notice of Appeal filed under 37 C.F.R. § 41.31 on January 9, 2007.

This brief is accompanied by the fee set forth in 37 CFR § 41.20(b)(2), as described in the accompanying TRANSMITTAL OF APPEAL BRIEF.

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This brief contains items under the following headings as required by 37 C.F.R. § 41.37:

I. Real Party In Interest

II. Related Appeals and Interferences

III. Status of Claims

IV. Status of Amendments

V. Summary of Claimed Subject Matter

VI. Grounds of Rejection to be Reviewed on Appeal

VII. Argument

VIII. Claims Appendix

IX. Evidence Appendix

X. Related Proceedings Appendix

Page 15 of this brief bears the attorney's signature.

I. REAL PARTY IN INTEREST

The real parties in interest for this appeal are:

A. The real party in interest is Lockheed Martin Corporation, a corporation established under the laws of the State of Maryland and having a principle place of business at 6801 Rockledge Drive, Bethesda, Maryland 20817.

II. RELATED APPEALS AND INTERFERENCES

Appellant submits that no related application is presently undergoing appeal or interference proceedings.

III. STATUS OF CLAIMS

A. Total Claims:

B. Current Status of Claims:

1. Claims canceled: 9
2. Claims withdrawn: none
3. Claims pending: 1-8 and 10-29
4. Claims allowed: none
5. Claims rejected: 1-8 and 10-29
6. Claims objected to: none

C. Claims on Appeal: 1-8 and 10-29

IV. STATUS OF AMENDMENTS

The Appellant has not filed any amendments to the application subsequent to the Final Office Action of November 9, 2006.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Independent Claim 1

Independent claim 1 recites a method of transmitting an optical beam that includes modulating an optical beam to encode information through use of an electroabsorption modulator (EAM) that receives an electrical input signal. (Page 5, lines 25-26; Page 9, line 24 to Page 10, line 3; Page 18, lines 11-19; Figure 1) The method includes monitoring the encoded optical beam to measure a harmonic value. (Page 5, lines 26-27; Page, lines 8-15; Page 15, lines 1-5; Page 18, lines 11-19; Figure 1) Upon detection of the harmonic value, the method includes adjusting the electrical input signal provided to the EAM based upon the measured harmonic value. (Page 5, lines 27-29; Page 16, line 27 to Page 17, line 12; Page 18, lines 11-19; Figure 1)

Dependent Claim 2

Claim 2 depends from independent claim 1 and recites that the method includes sampling the encoded optical beam to measure the harmonic value. (Page 5, lines 30-31; Page 19, lines 30-31)

Dependent Claim 3

Claim 3 depends from dependent claim 2 and recites that the method includes sampling the encoded optical beam with a photoreceiver. (Page 6, line 1; Page 8, lines 30-31; Page 9, lines 9-10; Page 10, line 22; Page 15, lines 22-30; Page 20, lines 4-8; Figure 1, element 118)

Dependent Claim 4

Claim 4 depends from independent claim 1 and recites that the method includes splitting the encoded optical beam to provide a sample signal and measuring the harmonic value of the sample signal. (Page 7, lines 2-3; Page 9, lines 7-8; Page 15, lines 26-30; Page 21, lines 4-10; Figure 1, elements 112, 110, and 116)

Dependent Claim 5

Claim 5 depends from independent claim 1 and recites that the harmonic value is measured for a second order harmonic. (Page 14, lines 1-6; Page 15, lines 9-15; Figure 2)

Dependent Claim 6

Claim 6 depends from independent claim 1 and recites that the method includes encoding a pilot signal onto the optical beam; monitoring the pilot signal; and adjusting the electrical input signal based upon the measured harmonic value detected in the pilot signal. (Page 6, lines 18-20; Page 15, lines 6-11; Page 18, lines 25-30; Page 20, lines 14-19; Figure 1, element 120)

Independent Claim 7

Independent claim 7 recites a method for transmitting information in an optical communications system. (Figure 1, element 100; Figure 3). The method includes forming an output optical beam having a pilot signal component having a frequency that is outside a signal band range of an information signal component provided to have information encoded thereon. (Page 6, lines 17-20; Page 18, lines 27-29) The method further includes encoding information onto the information signal component of the output optical beam through use of an electroabsorption modulator (EAM); (Page 7, lines 8-12; Page 18, lines 14-19; Figure 1, element 106) monitoring the pilot signal component output from the electroabsorption modulator (EAM) to determine the magnitude of a harmonic; (Page 6, lines 17-22; Page 18, lines 25-30; Figure 3) correlating the magnitude of the harmonic with an optimum electrical signal value to be input to the EAM to reduce the magnitude of the harmonic; (Page 6, lines 13-16; Page 12, lines 26-30; Page 14, lines 6-8; Figure 2) and adjusting an electrical input to the EAM to equal the optimum electrical signal value. (Page 6, line 23 to Page 7, line 4; Page 14, lines 6-20; Page 19, lines 16-20; Figure 2, element 232)

Dependent Claim 8

Claim 8 depends from independent claim 7 and recites that the method includes measuring the pilot signal component to determine the magnitude of a harmonic produced by encoding a pilot signal with the EAM. (Page 6, lines 4-8)

Dependent Claim 10

Claim 10 depends from independent claim 7 and recites that the method includes sampling the harmonic through use of a photoreceiver. (Page 6, line 1; Page 8, lines 30-31; Page 9, lines 9-10; Page 10, line 22; Page 15, lines 22-30; Page 20, lines 4-8; Figure 1, element 118)

Dependent Claim 11

Claim 11 depends from dependent claim 10 and recites that the method includes adjusting the electrical input to minimize the second order harmonic based upon the sampled harmonic. (Page 6, lines 20-22; Page 14, lines 9-12; Page 19, lines 13-20; Figure 2)

Dependent Claim 12

Claim 12 depends from independent claim 7 and recites that adjusting the electrical input includes adjusting the electrical input signal within a set of voltages corresponding to a range of values around a minimum harmonic value. (Page 6, lines 23-25; Page 13, lines 18-24; Figure 2)

Independent Claim 13

Independent claim 13 recites a computer readable medium having program instructions to cause a device to perform a method that includes modulating an optical beam to encode information through use of an electroabsorption modulator (EAM) provided with an electrical input signal. (Page 5, lines 25-26; Page 9, line 24 to Page 10, line 3; Page 18, lines 11-19; Figure 1) The method includes monitoring the encoded optical beam to measure a harmonic value; (Page 5, lines 26-27; Page, lines 8-15; Page 15, lines 1-5; Page 18, lines 11-19; Figure 1) and upon detection of

the harmonic value, adjusting the electrical input signal provided to the EAM based upon the measured harmonic value. (Page 5, lines 27-29; Page 16, line 27 to Page 17, line 12; Page 18, lines 11-19; Figure 1)

Dependent Claim 14

Claim 14 depends from independent claim 13 and recites that the method includes tracking a correlation of the harmonic value and the voltage level of the electrical input signal to determine a voltage input level that correlates to a lowest occurrence of the harmonic. (Page 6, lines 10-16 and 25-30; Page 7, lines 15-18; Page 18, lines 20-22; Page 19, lines 9-15; Figure 2; Figure 3, element 330)

Dependent Claim 15

Claim 15 depends from independent claim 13 and recites that the method includes applying an adjusted biased electrical input signal component to the input optical beam based upon the determined electrical input level that correlates to the lowest occurrence of the harmonic. (Page 6, lines 27-30; Figure 2; Figure 3, element 340)

Dependent Claim 16

Claim 16 depends from independent claim 13 and recites that the method includes adjusting the electrical input signal to minimize the harmonic. (Page 6, lines 20-22; Page 14, lines 9-12; Page 19, lines 13-20; Figure 2)

Dependent Claim 17

Claim 17 depends from independent claim 13 and recites that the method includes adjusting the biased electrical input signal component to limit the harmonic to within 5% of a lowest occurrence of the harmonic. (Page 7, lines 1-2; Page 19, lines 21-29; Figure 2)

Independent Claim 18

Independent claim 18 recites an optical transmission system that includes an electroabsorption modulator (EAM) configured to encode information in an optical beam and to modulate the optical beam according to an electrical input signal. (Page 5, lines 25-26; Page 7, lines 28-31; Page 9, line 24 to Page 10, line 3; Page 18, lines 11-19; Figure 1, elements 100, 106, 108, and 122) The system includes a monitoring component configured to measure a harmonic value in the encoded optical beam and to calculate an adjustment in the electrical input signal, to be applied to the EAM so as to reduce the measured harmonic value. (Page 8, lines 1-3; Page 19, lines 16-20; Figure 1)

Dependent Claim 19

Claim 19 depends from independent claim 18 and recites that the monitoring component is configured to measure a harmonic value of a second order harmonic. (Page 14, lines 1-6; Page 15, lines 9-15; Figure 2)

Dependent Claim 20

Claim 20 depends from independent claim 18 and recites that the monitoring component is a signal processing card. (Page 8, lines 4-5)

Dependent Claim 21

Claim 21 depends from independent claim 18 and recites that a photoreceiver is positioned to receive an output optical beam from the EAM. (Page 6, line 1; Page 8, lines 30-31; Page 9, lines 9-10; Page 10, line 22; Page 15, lines 22-30; Page 20, lines 4-8; Figure 1, elements 118, 110, and 116);

Dependent Claim 22

Claim 22 depends from dependent claim 21 and recites that the system includes an optical splitter to split the output optical beam and to direct a sample signal to the photoreceiver. (Page 7, lines 2-3; Page 9, lines 7-8; Page 15, lines 26-30; Page 21, lines 4-10; Figure 1, elements 112, 110, 116, and 120)

Dependent Claim 23

Claim 23 depends from dependent claim 22 and recites that the sample signal is 1% of the output optical beam. (Page 20, lines 4-8)

Dependent Claim 24

Claim 24 depends from dependent claim 23 and recites that the photoreceiver is positioned to receive the sample signal. (Page 15, lines 26-30; Figure 1, elements 116 and 118)

Dependent Claim 25

Claim 25 depends from independent claim 18 and recites that the system includes an adjustment module operable to adjust the electrical input signal based upon changes in ambient temperature. (Page 7, lines 18-21; Page 16, line 27 to Page 17, line 2; Figure 1, element 120)

Dependent Claim 26

Claim 26 depends from independent claim 18 and recites that the system includes an adjustment module operable to adjust the electrical input signal based upon changes in device generated temperature. (Page 7, lines 18-21; Page 16, line 27 to Page 17, line 2; Figure 1, element 120)

Dependent Claim 27

Claim 27 depends from independent claim 18 and recites that the system includes an adjustment module operable to adjust the electrical input signal in greater amounts as the harmonic trends away from a lowest occurrence of the harmonic. (Page 7, lines 22-27; Page 17, lines 3-12)

Dependent Claim 28

Claim 28 depends from independent claim 18 and recites that the system includes an adjustment module operable to adjust the electrical input signal in lesser

amounts as the harmonic trends toward a lowest occurrence of the harmonic. (Page 7, lines 22-27; Page 17, lines 3-12)

Dependent Claim 29

Claim 29 depends from independent claim 18 and recites that the system includes an optical source for providing the optical beam to the EAM. (Page 8, lines 13-19; Page 9, lines 16-20 and 24-25; Page 10, lines 4-24; Figure 1, elements 102, 104, and 106)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether or not claims 1-8 and 10-29 are unpatentable under 35 USC § 103(a) over Notargiacomo et al. (U.S. Patent No. 6,879,422) in view of Hui et al. (U.S. Patent No. 6,438,148).

VII. ARGUMENT

A. Arguments against the rejection under 35 USC § 103(a) over Notargiacomo et al. (U.S. Patent No. 6,879,422) in view of Hui et al. (U.S. Patent No. 6,438,148).

REJECTIONS UNDER 35 U.S.C. § 103(a)

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of

success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

Applicant respectfully traverses the rejections of the claims listed above, and addresses their rejection as follows.

Independent Claims 1, 7, 13, and 18

In the Office Action mailed on May 23, 2006, the Examiner agrees that the Notargiacomo reference does not disclose an electroabsorption modulator. (Office Action, Page 11). However, the Examiner maintains the assertion that "Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam . . . for the purpose of providing a modulator to match the required speed of the operation."

The Examiner contends that Hui teaches:

> using an electroabsorption modulator in a feedback system to encode information onto an optical beam (Column 4, line 22-Column 5, line 35 and Column 8, lines 43-51, wherein the electroabsorption modulator "34" encodes information onto the optical beam and feedback system "44" controls the electrical input "56" into the modulator, Figure 1), for the purpose of providing a modulator to match the required speed of the operation (Column 8, lines 43-51).

From Applicant's review of the Hui reference, the reference appears to describe a method for encoding data into a high speed optical train by providing phase shifts between "N" short pulse optical trains of frequency "f" to form a combined optical pulse train having a frequency of "Nf." (Column 1, lines 57-67).

Further, as illustrated in Figure 1, the feedback 56 is fed back into the system at the lasers 20 and 30 by bias trees 50 and 52. This operation is described in detail at col. 5, lines 21-27, wherein the reference states:

> The feedback means 44 is used to provide an active control of the relative phase shift between the branches 16 and 18. It includes narrow bandwidth photodiode and electrical k amplifier (none of them is shown), the amplifier being centralized at frequency 2f. The feedback means 44 extracts the information about the current phase alignment between the two branches and generates a feedback signal 56 sent to the variable delay line 42, which is a voltage controlled microwave delay line, to adjust the phase shift between the lasers 20 and 30 and to ensure that the trains 12 and 14 interleave in precise timing.

Accordingly, this reference specifically directs its adjustment to the phase shift of the one or more lasers. As illustrated above, this is not what Applicant has claimed, nor does it suggest the claimed structure since the reference is not biasing the correct component of the system. Specifically, there is no suggestion of applying the feedback 56 to the modulators 25 and 35.

Further, there can be no suggestion because the reference has a completely different goal in mind, namely, the adjustment of the phase shift between two laser sources to ensure that the trains interleave in precise timing. As stated above, this is not the focus or the mechanism claimed by Applicant or the focus of the Notargiacomo reference.

From Applicant's review of the Notargiacomo and Hui references, neither reference, either independently or in combination, teaches or suggests the concept of **adjusting the electrical input signal of an electroabsorption modulator** based on a measured harmonic value. In contrast, Applicant's independent claim 1 recites, among other things:

> adjusting the electrical input signal provided to the EAM based upon the measured harmonic value

Claim 7 recites, among other things:

Claim 7 recites, among other things:

> adjusting an electrical input to the EAM

Claim 13 recites, among other things:

> upon detection of the harmonic value, adjusting the electrical input signal provided to the EAM based upon the measured harmonic value

Claim 18 recites, among other things:

> to calculate an adjustment in the electrical input signal, to be applied to the EAM

In the Final Office Action mailed on November 09, 2006, the Examiner states, "the Hui et al '148 reference is used as a teaching to show that electroabsorption modulators are used in feedback-type optical systems...irregardless of whether or not an electrical input signal of the electroabsorption modulator is adjusted by the feedback system." (Final Office Action, Page 11). Page 11 of the Final Office Action also provides, "the examiner does not state that Hui et al '148 includes an electrical input into the modulator, rather that a feedback system is used to influence an input into the modulator."

Applicant respectfully submits that simply showing an electroabsorption modulator in a "feedback-type" optical system that may be used to "influence an input" into the modulator is insufficient to provide a motivation to combine the systems of the Hui and Notargiacomo references. As stated above, the feedback 56 shown in Figure 1 of the Hui reference is provided indirectly to an input to the laser 30 via a bias tree 52, and not to the modulator 35.

Furthermore, as stated in the Applicant's response to the Final Office Action of February 06, 2006, Applicant submits that Hui does not teach or suggest an electroabsorption modulator as recited in each of independent claims 1, 7, 13, and 18. The Examiner cites Column 8, lines 43-51 as disclosing an electroabsorption modulator.

However, in the cited quote, Hui misuses the term electroabsorptive, which is the only time it is used in the Hui reference. Specifically, Column 8, lines 46-51 recite "The encoding means 24 and 34 may include electro-optical modulators or other known types of modulators providing the required speed of operation. Preferably the modulators are electro-absorptive, $LiNbO_3$ or III-V semiconductor material based devices, either Mach-Zehnder or travelling wave type."

In other words, the referral to "electro-absorptive" is in reference to Mach-Zehnder or travelling wave modulators, which are electro-optic modulators, not electroabsorptive modulators and therefore was made in an erroneous manner. Moreover, all other references to modulators used in the Hui reference are to electro-optic modulators.

However, even if the Board does find that this use of the term electroabsorptive would be sufficient, the Hui reference provides adjustment to the wrong component of the system and for a different purpose as discussed above, and therefore, still does not teach or suggest the subject matter in independent claims 1, 7, 13, and 18 as discussed herein. Based on the foregoing, Applicant respectfully submits that the cited references do not support a proper prima facie case of obviousness. Applicant respectfully requests reconsideration and withdrawal of the § 103 rejection to independent claims 1, 7, 13, and 18, as well as those claims which depend therefrom.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner and/or members of the Board are invited to telephone Applicant's attorney Jeffery L. Cameron at (612) 236-0121 to facilitate this appeal.

CERTIFICATE UNDER 37 C.F.R. §1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner for Patents, P.O. BOX 1450, Alexandria, VA 22313-1450, on this 6th day of March, 2007.

Alison L. Subandon
Name

Signature

Respectfully Submitted,

John A. Krawczak

By their Representatives:
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Minneapolis, MN 55403

Atty: Jeffery L. Cameron
Reg. No.: 43527

3/6/07
Date:

VIII. CLAIMS APPENDIX

1. (Previously Presented) A method of transmitting an optical beam, comprising:

modulating an optical beam to encode information through use of an electroabsorption modulator (EAM) that receives an electrical input signal;

monitoring the encoded optical beam to measure a harmonic value; and

upon detection of the harmonic value, adjusting the electrical input signal provided to the EAM based upon the measured harmonic value.

2. (Original) The method of claim 1, further including sampling the encoded optical beam to measure the harmonic value.

3. (Original) The method of claim 2, further including sampling the encoded optical beam with a photoreceiver.

4. (Original) The method of claim 1, further including splitting the encoded optical beam to provide a sample signal and measuring the harmonic value of the sample signal.

5. (Original) The method of claim 1, wherein the harmonic value is measured for a second order harmonic.

6. (Previously Presented) The method of claim 1, further including:

encoding a pilot signal onto the optical beam;

monitoring the pilot signal; and

adjusting the electrical input signal based upon the measured harmonic value detected in the pilot signal.

7. (Previously Presented) A method for transmitting information in an optical communications system, comprising:

forming an output optical beam having a pilot signal component having a frequency that is outside a signal band range of an information signal component provided to have information encoded thereon;

encoding information onto the information signal component of the output optical beam through use of an electroabsorption modulator (EAM);

monitoring the pilot signal component output from the electroabsorption modulator (EAM) to determine the magnitude of a harmonic;

correlating the magnitude of the harmonic with an optimum electrical signal value to be input to the EAM to reduce the magnitude of the harmonic; and

adjusting an electrical input to the EAM to equal the optimum electrical signal value.

8. (Previously Presented) The method of claim 7, wherein the method includes measuring the pilot signal component to determine the magnitude of a harmonic produced by encoding a pilot signal with the EAM.

9. (Canceled).

10. (Original) The method of claim 7, further including sampling the harmonic through use of a photoreceiver.

11. (Original) The method of claim 10, further including adjusting the electrical input to minimize the second order harmonic based upon the sampled harmonic.

12. (Original) The method of claim 7, wherein adjusting the electrical input includes adjusting the electrical input signal within a set of voltages corresponding to a range of values around a minimum harmonic value.

13. (Previously Presented) A computer readable medium having program instructions to cause a device to perform a method, comprising:

modulating an optical beam to encode information through use of an electroabsorption modulator (EAM) provided with an electrical input signal;

monitoring the encoded optical beam to measure a harmonic value; and

upon detection of the harmonic value, adjusting the electrical input signal provided to the EAM based upon the measured harmonic value.

14. (Previously Presented) The computer readable medium of claim 13, further including tracking a correlation of the harmonic value and the voltage level of the electrical input signal to determine a voltage input level that correlates to a lowest occurrence of the harmonic.

15. (Previously Presented) The computer readable medium of claim 13, further including applying an adjusted biased electrical input signal component to the input optical beam based upon the determined electrical input level that correlates to the lowest occurrence of the harmonic.

16. (Previously Presented) The computer readable medium of claim 13, further including adjusting the electrical input signal to minimize the harmonic.

17. (Previously Presented) The computer readable medium of claim 13, further including adjusting the biased electrical input signal component to limit the harmonic to within 5% of a lowest occurrence of the harmonic.

18. (Previously Presented) An optical transmission system, comprising:

an electroabsorption modulator (EAM) configured to encode information in an optical beam and to modulate the optical beam according to an electrical input signal; and

a monitoring component configured to measure a harmonic value in the encoded optical beam and to calculate an adjustment in the electrical input signal, to be applied to the EAM so as to reduce the measured harmonic value.

19. (Original) The optical transmission system of claim 18, wherein the monitoring component is configured to measure a harmonic value of a second order harmonic.

20. (Original) The optical transmission system of claim 18, wherein the monitoring component is a signal processing card.

21. (Original) The optical transmission system of claim 18, wherein a photoreceiver is positioned to receive an output optical beam from the EAM.

22. (Original) The optical transmission system of claim 21, further including an optical splitter to split the output optical beam and to direct a sample signal to the photoreceiver.

23. (Original) The optical transmission system of claim 22, wherein the sample signal is 1% of the output optical beam.

24. (Original) The optical transmission system of claim 23, wherein the photoreceiver is positioned to receive the sample signal.

25. (Previously Presented) The optical transmission system of claim 18, further including an adjustment module operable to adjust the electrical input signal based upon changes in ambient temperature.

26. (Previously Presented) The optical transmission system of claim 18, further including an adjustment module operable to adjust the electrical input signal based upon changes in device generated temperature.

27. (Previously Presented) The optical transmission system of claim 18, further including an adjustment module operable to adjust the electrical input signal in greater amounts as the harmonic trends away from a lowest occurrence of the harmonic.

28. (Previously Presented) The optical transmission system of claim 18, further including an adjustment module operable to adjust the electrical input signal in lesser amounts as the harmonic trends toward a lowest occurrence of the harmonic.

29. (Original) The optical transmission system of claim 18, further including an optical source for providing the optical beam to the EAM.

IX. EVIDENCE APPENDIX

None

X. RELATED PROCEEDINGS APPENDIX

None